

REMARKS/ARGUMENTS

Claims 25-48 are pending, claims 46-48 having been withdrawn from consideration. By this Amendment, claim 26 is cancelled, and claims 25 and 27 are amended. Support for the amendments to claims 25 and 27 can be found, for example, in original claims 2, 19, 25 and 27. No new matter is added. In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

Withdrawn Claims

For the reasons set forth below, Applicants submit that all pending claims presently subject to examination are in condition for allowance. Because withdrawn claims 46-48 depend from, and thus recite all features of, allowable claims, rejoinder and allowance of claims 46-48 are respectfully requested.

Rejections Under 35 U.S.C. §103

A. Rzad and Barnes

The Office Action rejects claims 25-29, 32-36 and 39-44 under 35 U.S.C. §103(a) over U.S. Patent No. 5,156,882 to Rzad et al. ("Rzad") in view of U.S. Patent Application Publication No. 2005/0098115 to Barnes et al. ("Barnes"). Applicants respectfully traverse the rejection.

Claim 25 recites "[a] method for depositing a thin film on a substrate, the method comprising: heating the substrate at a temperature below 250°C; introducing a pre-vaporized reactive titania CVD precursor into a gas flow flowing through a coating region; applying energy to generate an atmospheric pressure glow discharge plasma in the coating region and using the atmospheric pressure glow discharge plasma as a major source of reaction to deposit the thin film on the substrate heated at the temperature below 250°C; and performing

a post treatment on the thin film using an atmospheric glow discharge plasma to modify properties and structure of the thin film; wherein a water vapor level is controlled to be below 1%" (emphasis added). Rzad and Barnes do not disclose or suggest such a method.

~~(X) D~~ By this Amendment, claim 25 is amended to require a post treatment with an atmospheric glow discharge plasma and that the water vapor level is controlled to be below 1%.

Applicants submit that Rzad and Barnes fail to disclose or suggest this additional combination of features. Accordingly, the combination of Rzad and Barnes fails to disclose or suggest each and every feature of claim 25.

The Office Action asserts that Rzad teaches carrying out a plasma process at low pressures. *See* December 12, 2007 Office Action, page 3. While Rzad discloses carrying out PECVD in a reactor chamber that is capable of being evacuated (*see Rzad*, column 6, lines 31 to 36), Applicants note that PECVD is not a glow discharge plasma at atmospheric pressure. The present inventors surprisingly discovered that employing the reaction conditions of the method of claim 25 allows for an increased degree of crystallinity in the obtained film, which not only provides improved physical properties but also has a significant impact on photocatalytic properties. *See, e.g.*, present specification, page 5, lines 9 to 15. Rzad and Barnes do not disclose or suggest the combination of reaction conditions of claim 25, or the benefits stemming therefrom.

As explained, claim 25 would not have been rendered obvious by Rzad and Barnes. Claims 26-29, 32-36 and 39-44 depend from claim 25 and, thus, also would not have been rendered obvious by Rzad and Barnes. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

B. Rzad, Barnes and Horiike

The Office Action rejects claims 30 and 31 under 35 U.S.C. §103(a) over Rzad in view of Barnes and U.S. Patent No. 5,185,132 to Horiike et al. ("Horiike"). Applicants respectfully traverse the rejection.

For the reasons discussed above, Rzad and Barnes fail to disclose or suggest each and every feature of claim 25. Horiike fails to remedy the deficiencies of Rzad and Barnes. Horiike is cited for its alleged disclosure of a thermal control system. *See* July 5, 2007 Office Action, page 9. However, Horiike, like Rzad and Barnes, fails to disclose or suggest employing a glow discharge plasma or maintaining a water vapor amount of less than 1%. Accordingly, the combination of references fails to disclose or suggest each and every feature of claim 25.

As explained, claim 25 would not have been rendered obvious by Rzad, Barnes and Horiike. Claims 30 and 31 depend from claim 25 and, thus, also would not have been rendered obvious by Rzad, Barnes and Horiike. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

C. Rzad, Barnes and David

The Office Action rejects claims 37 and 38 under 35 U.S.C. §103(a) over Rzad in view of Barnes and U.S. Patent No. 6,197,120 to David ("David"). Applicants respectfully traverse the rejection.

For the reasons discussed above, Rzad and Barnes fail to disclose or suggest each and every feature of claim 25. David fails to remedy the deficiencies of Rzad and Barnes. David is cited for its alleged disclosure of employing electrodes formed from a material that reduces heat generation. *See* July 5, 2007 Office Action, page 9. However, David, like Rzad and Barnes, fails to disclose or suggest employing a glow discharge plasma or maintaining a

water vapor amount of less than 1%. Accordingly, the combination of references fails to disclose or suggest each and every feature of claim 25.

As explained, claim 25 would not have been rendered obvious by Rzad, Barnes and David. Claims 37 and 38 depend from claim 25 and, thus, also would not have been rendered obvious by Rzad, Barnes and David. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

D. Rzad and Takano

The Office Action rejects claim 45 under 35 U.S.C. §103(a) over Rzad in view of U.S. Patent No. 6,828,235 to Takano ("Takano"). Applicants respectfully traverse the rejection.

For the reasons discussed above, Rzad fails to disclose or suggest each and every feature of claim 25. Takano fails to remedy the deficiencies of Rzad. Takano is cited for its alleged disclosure of employing flushing zones. *See* July 5, 2007 Office Action, page 10. However, Takano, like Rzad, fails to disclose or suggest employing a glow discharge plasma or maintaining a water vapor amount of less than 1%. Accordingly, the combination of references fails to disclose or suggest each and every feature of claim 25.

As explained, claim 25 would not have been rendered obvious by Rzad and Takano. Claim 45 depends from claim 25 and, thus, also would not have been rendered obvious by Rzad and Takano. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

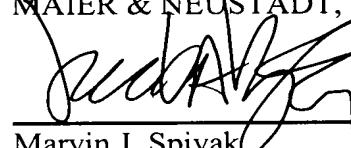
Application No. 10/522,185  
Reply to Office Action of December 12, 2007

Conclusion

For the foregoing reasons, Applicants submit that claims 25-48 are in condition for allowance. Prompt reconsideration and allowance are respectfully requested.

Respectfully submitted,

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